OCCUPATIONAL ANALYSES SERIES

Sprinkler System Installer

2003

Human Resources Development Canada
Developpement des ressources humaines Canada

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Sprinkler System Installer

2003

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Human Resources
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The Canadian Council of Directors of Apprenticeship (CCDA) recognizes this occupational analysis as the national standard for the occupation of Sprinkler System Installer.

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Alain Rivard	Manitoba
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OTHER RELATED OCCUPATIONAL TITLES

This analysis covers tasks performed by a Sprinkler System Installer whose occupational title has been identified by some provinces and territories of Canada under the following names:

Pipefitter - Fire Protection Mechanic Specialty
Sprinkler and Fire Protection Installer
Sprinkler and Fire Protection Systems Installer
Sprinkler Fitter

LIST OF PUBLISHED OCCUPATIONAL ANALYSES *

TITLE	NOC** Code
Appliance Service Technician (1997)	7332
Aquaculture Technician (1977)	2221
Arts Administrator (1989)	0114
Automotive Painter (1995)	7322
Automotive Service Technician (1998)	7321
Automotive Technician - Automatic Transmission (1990)	7321
Automotive Technician - Electrical/Electronics (1992)	7321
Automotive Technician - Engine Repair and Fuel Systems (1989)	7321
Automotive Technician - Front-End (1989)	7321
Automotive Technician - Manual Transmission, Driveline and Brakes (1990)	7321
Aviation Machinist (1994)	7231
Baker (1997)	6252
Blaster (Surface) (1987)	7372
Boilermaker (1994)	7262
Bricklayer (2000)	7281
Cabinetmaker (2000)	7272
Carpenter (1998)	7271
Cement Finisher (1995)	7282
Construction Electrician (1994)	7241
Cook (1997)	6242
Electrical Rewind Mechanic (1999)	7333
Electronics Technician (Consumer Products) (1997)	2242
Electronics Technician Vol. I (1986) (Video Equipment)	2242
Electronics Technician Vol. II (1986) (Audio Equipment)	2242
Electronics Technician Vol. III (1986) (Computer Equipment)	2242

* **Red Seal analyses are indicated in bold**

** **National Occupational Classification**

Electronics Technician Vol. IV (1986) (Office Equipment)	2242
Electronics Technician Vol. VI (1986) (Communication Equipment)	2242
Electronics Technician Vol. VII (1986) (Signaling Equipment)	2242
Electronics Technician Vol. VIII (1986) (Navigation Equipment)	2242
Electronics Technician Vol. IX (1986) (Video Game Equipment)	2242
Electronics Technician Vol. X (1987) (CADD Equipment)	2242
Electronics Technician Vol. XI (1987) (CAM Equipment)	2242
Electronics Technician Vol. XII (1987) (Robotics Equipment)	2242
Electronics Technician Vol. XIII (1987) (Biomedical and Laboratory Equipment)	2242
Electronics Technician Vol. XIV (1987) (Industrial Process-Control Equipment)	2243
Farm Equipment Mechanic (2000)	7312
Floorcovering Installer (1997)	7295
Glazier (1994)	7292
Hairstylist (1997)	6271
Heating (Gas and Oil) Servicer - Commercial and Industrial (1978)	7331
Heavy Duty Equipment Mechanic (1998)	7312
Heavy Equipment Operator (1983)	7421
Industrial Electrician (1997)	7242
Industrial Instrument Mechanic (2000)	2243
Industrial Mechanic (Millwright) (1999)	7311
Insulator (Heat and Frost) (2000)	7293
Ironworker (Generalist) (1993)	7264
Lather (Interior Systems Mechanic) (2002)	7284
Logistics (1992)	0713
Machinist (1998)	7231
Major Electrical Appliance Repairer (1984)	7332

Mobile Crane Operator (1997)	7371
Motorcycle Mechanic (1995)	7334
Motor Vehicle Body Repairer (Metal and Paint) (1997)	7322
New Home Builder and Residential Renovation Contractor (1992)	0712
Oil Burner Mechanic (1997)	7331
Painter and Decorator (2000)	7294
Partsperson (1995)	1472
Plumber (1996)	7251
Power Engineer (1997)	7351
Powerline Technician (1996)	7244
Recreation Vehicle Mechanic (2000)	7383
Refrigeration and Air Conditioning Mechanic (1997)	7313
Roofer (1997)	7291
Sheet Metal Worker (1997)	7261
Sprinkler System Installer (2003)	7252
Steamfitter-Pipefitter (1996)	7252
Steel Fabricator (Fitter) (1994)	7263
Tool and Die Maker (1997)	7232
Truck-Trailer Repairer (1994)	7321
Truck and Transport Mechanic (2000)	7321
Welder (1996)	7265

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Policy and Apprenticeship Division
Human Resources Partnerships
Human Resources Development Canada
Place du Portage, Phase IV, 5th Floor
Hull, Quebec K1A 0J9

FOREWORD

The first National Conference on Apprenticeship in Trades and Industries, held in Ottawa in 1952, recommended that the federal government be requested to co-operate with provincial apprenticeship committees and officials in preparing analyses of a number of skilled occupations. To this end, Human Resources Development Canada sponsors a program, under the guidance of the Canadian Council of Directors of Apprenticeship (CCDA), to develop a series of occupational analyses.

The Occupational Analysis Program has the following objectives:

- to identify and group the tasks performed by skilled workers in particular occupations;
- to identify those tasks that are performed by skilled workers in every province and territory;
- to develop instruments for use in the preparation of interprovincial standards "Red Seal" examinations and curricula for training leading to the certification of skilled workers;
- to facilitate the mobility, in Canada, of trainees and skilled workers;
- to supply employers and employees, and their associations, industries, training institutions, and governments with analyses of the tasks performed in particular occupations.

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GUIDE TO ANALYSIS

DEVELOPMENT OF ANALYSIS

A draft analysis is developed by a knowledgeable consultant who, with the assistance of a committee of industry experts in the field, identifies all the tasks performed in the occupation.

The draft is then assigned to occupational analysts at Human Resources Development Canada for translation and then returned to the consultant for review to ensure conformity with the nationally approved format.

The consultant will then forward a copy of this analysis to provincial/territorial authorities for validation by specialists in the field. Their recommendations are assessed and incorporated into the final draft which also includes the identification of the common core tasks performed in the occupation.

The occupational analysis is published in both official languages.

STRUCTURE OF ANALYSIS

To facilitate the understanding of the nature of the occupation, the work performed is divided into the following divisions:

A. **BLOCK**	is the largest division within the analysis and reflects a distinct operation relevant to the occupation.
B. **TASK**	is the distinct activity that, combined with others, makes up the logical and necessary steps the worker is required to perform to complete a specific assignment within a "BLOCK".
C. **SUB-TASK**	is the smallest division into which it is practical to subdivide any work activity and, combined with others, fully describes all duties constituting a "TASK".

Supporting Knowledge & Abilities

The element of skill and knowledge that an individual must acquire to adequately perform the task is identified under this heading.

Trends

Any shifts or changes in technology that affect the block are identified under this heading.

Related Components

All components of a specified task being undertaken by the sprinkler system installer are identified under this heading.

Tools and Equipment

All tools and equipment necessary for the sprinkler system installer to complete a task are identified under this heading.

VALIDATION METHOD

At the request of the Canadian Council of Directors of Apprenticeship (CCDA), the Standardization Sub-Committee developed a method for the validation of the national Red Seal occupational analyses.

A draft of the analysis is sent to all provinces and territories for validation. Each jurisdiction rates the sub-tasks and applies percentage ratings to blocks and tasks. This method for the validation of the national occupational analysis identifies common core tasks across Canada for a specific occupation. This feature facilitates the weighting of the interprovincial Red Seal examinations.

DEFINITIONS

YES: the sub-task is performed by workers in the occupation in a specific jurisdiction.

NO: the sub-task is not performed by workers in the occupation in a specific jurisdiction.

BLOCK %: the average number of questions (items), derived from the collective decision made by workers within the occupation from all areas of Canada, that will be placed on an interprovincial examination to assess each block of the analysis.

TASK %: the average number of questions (items), derived from the collective decision made by workers within the occupation from all areas of Canada, that will be placed on an interprovincial examination to assess each task of the analysis.

NV: Not Validated by a province/territory.

ND: Not Designated in that province/territory.

PROVINCIAL AND TERRITORIAL ABBREVIATIONS

NF:	Newfoundland and Labrador
NS:	Nova Scotia
PE:	Prince Edward Island
NB:	New Brunswick
QC:	Quebec
ON:	Ontario
MB:	Manitoba
SK:	Saskatchewan
AB:	Alberta
BC:	British Columbia
NT:	Northwest Territories
YK:	Yukon
NU:	Nunavut

COMMON CORE

The criteria for determining common core depend on the performance of sub-tasks. If 70 percent of the responding jurisdictions (excluding NVs and NDs) perform a sub-task, it shall be considered common core.

Interprovincial Red Seal examinations are based on the common core identified through this validation process. This process identifies what will be assessed through the interprovincial examination.

BLOCKS AND TASKS WEIGHTING (APPENDIX "C")

This appendix represents the block and task percentages as submitted by each jurisdiction.

Each jurisdiction, with the use of a provincial/territorial occupational advisory committee, validates the content, places percentages on blocks and tasks, and indicates whether or not the sub-tasks are performed by the skilled workers within the occupation. The results of this exercise are submitted to the consultant who then analyzes the data and develops this appendix which provides the individual jurisdictional validation results as well as the national averages of all responses.

PIE CHART (APPENDIX "D")

The graph depicts the national percentages assigned to blocks in the analysis.

SCOPE OF THE SPRINKLER SYSTEM INSTALLER OCCUPATION

The occupational title "Sprinkler System Installer" defines persons who, because of their knowledge, training and abilities, are capable of installing, testing, maintaining, and repairing fire protection systems.

Sprinkler System Installers are usually, but not exclusively, found in industrial, institutional, commercial, and residential situations, such as: plants, factories, office buildings, hotels, apartment buildings, residential buildings, and airports. Fire protection systems may be assembled from a wide variety of equipment, available from a considerable range of manufacturers.

Sprinkler System Installers must often perform their jobs in conditions that present physical discomfort and danger. They have to work overhead and on power lifts, scaffolds, and ladders, and tolerate physical discomfort caused by heavy manual labour and repetitive tasks as well as temperature changes, noises, dust, and environmental hazards.

Accomplishing the Sprinkler System Installer's tasks depends largely on: knowledge of piping systems and components; knowledge of codes, regulations, and laws; experience in a wide variety of situations; ability to operate hand and power tools; and ability to determine the most appropriate and safe means of proceeding with the work. Sprinkler System Installers also need to possess good mechanical and mathematical aptitude, good physical co-ordination, and an ability to plan and think sequentially.

Sprinkler System Installers are routinely required to co-ordinate their work with other tradespeople, who include (but are not limited to) plumbers, steamfitters-pipefitters, sheetmetal workers, bricklayers, drywallers, carpenters, ironworkers, electricians, and insulators. It is important then that installers be at least somewhat familiar with the scope of work encompassed by these trades.

OCCUPATIONAL OBSERVATIONS

Some overlap exists between trade tasks performed by Sprinkler System Installers and other tradespeople. Insofar as this analysis is concerned, an attempt has been made to include tasks done by Sprinkler System Installers everywhere in Canada, regardless of overlaps and/or jurisdictional restrictions.

Technology has contributed to many changes in equipment design and construction. Worth noting are the introduction of lighter materials and system components. These innovations impose constantly changing methods, techniques, equipment, and appropriate skills and knowledge for their proper installation, diagnosis and repair. Remaining current with these changes presents a daily challenge to members of this trade.

Today's equipment is outfitted with a range of technologically sophisticated features and systems, some computerized, that in some cases have reduced some of the maintenance formerly required. As equipment becomes more technically complex, accompanying manuals and charts tend to be very specific in terms of factors critical not only to the job at hand, but also to the long-term operation of the system.

The work of a Sprinkler System Installer, by its nature, continues to be somewhat hazardous. Errors in judgement or in application of trade knowledge can be costly, both in terms of injury to workers and building occupants, and damage to equipment or materials. Workers must maintain constant vigilance in working safely and preventing accidents at all times.

Sprinkler System Installers are more than ever required to document and maintain records, as a result of more stringent laws and regulations. Fire protection systems are becoming more common in residences where, just as in industrial and other settings, they must be appropriately installed, inspected and documented. This places more responsibility on individuals who work in smaller crews.

Legislated preventative maintenance, intended to reduce hazards and costs related to system failures, has increased the amount of work available for the Sprinkler System Installer.

A high standard of trade professionalism and the ability to communicate effectively is of great importance.

The knowledge and ability to use and maintain power-elevated work platforms are becoming requirements for certification.

SAFETY

Safe working procedures and conditions, accident prevention, and the preservation of health are of primary importance to industry in Canada. These responsibilities are shared and require the joint efforts of government, employers, and employees. It is imperative that all parties become aware of circumstances that may lead to injury or harm. Safe learning experiences and environments can be created by controlling the variables and behaviours that may contribute to accidents or injury.

It is generally recognized that safety-conscious attitudes and work practices contribute to a healthy, safe, and accident-free working environment.

It is imperative to apply and be familiar with the Occupational Health and Safety Act and Regulations. As well, it is essential to determine workplace hazards and take measures to protect oneself, co-workers, the public, and the environment.

As safety education is an integral part of training in all jurisdictions, personal safety practices are not recorded in this document. However, the technical safety aspect relating to each task and sub-task are included throughout this analysis.

ANALYSIS

BLOCK A

COMMON OCCUPATIONAL SKILLS

Trends: *Greater awareness for safety on the part of employers and employees regarding hazards associated with use of tools and equipment. New methods, tools and materials are being introduced on a continuous basis. Increased use of computers and communication technologies. Increased awareness among employers and employees regarding the critical importance of knowledge and skill upgrading. Tendency towards smaller work crews composed of highly skilled and versatile workers. Scaffolding certification becoming necessary. More responsibilities assigned to individual installers. Trend towards fast tracking tasks using pre-fabricated components. Increased demand for installers to possess superior communication and interpersonal skills and to present themselves in a professional manner.*

Task 1 **Plans work activities.**

Related Components: Contract documents, work schedules, specifications, codes and standards, regulations, technical manuals, work site meetings, blue prints, "as built " drawings

Tools and Equipment: Specialty equipment and measuring tools

Sub-task

1.01 **Interprets drawings and specifications.**

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	NV

1.01.01 knowledge of contract documents (drawings, agreements, and specifications)

1.01.02 knowledge of metric and imperial systems

1.01.03 ability to read and interpret contract documents, tenders, drawings, and specifications

1.01.04 ability to determine scope of work and schedule deadlines

1.01.05 ability to determine quality requirements, materials, and workmanship

1.01.06 ability to participate in worksite meetings

Sub-task

1.02 Determines materials and labour requirements.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	NV

1.02.01 knowledge of estimating procedures

1.02.02 knowledge of various types of materials

1.02.03 knowledge of labour requirements

1.02.04 knowledge of appropriate fire protection systems

1.02.05 ability to determine material requirements

1.02.06 ability to determine job costs

1.02.07 ability to perform basic calculations

Sub-task

1.03 Plans work process.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

1.03.01 knowledge of safe work practices

1.03.02 knowledge of applicable regulations, standards, and applicable codes

1.03.03 knowledge of applicable types of fire protection systems

1.03.04 knowledge of applicable types of control devices

1.03.05 knowledge of job schedules

1.03.06 ability to plan work activities to ensure a safe and logical sequence of operations

1.03.07 ability to verify elevation and locations

1.03.08 ability to select storage area

1.03.09 ability to arrange laydown areas

Supporting Knowledge & Abilities

1.03.10 ability to schedule and coordinate shutdown of systems

1.03.11 ability to communicate with all trade-related persons involved

1.03.12 ability to schedule and coordinate installation

Sub-task

1.04 Schedules equipment and materials.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

1.04.01 knowledge of a wide variety of materials and equipment used in the trade

1.04.02 knowledge of regulations and contract requirements

1.04.03 knowledge of material take-off procedures

1.04.04 ability to estimate quantities

1.04.05 ability to order materials and equipment

1.04.06 ability to schedule the delivery of materials and equipment

1.04.07 ability to co-ordinate off-loading

1.04.08 ability to take inventory materials and equipment

Sub-task

1.05 Completes contractual site requirements.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

1.05.01 knowledge of test and inspections to be performed

1.05.02 knowledge of materials to be posted or provided to client

Supporting Knowledge & Abilities

1.05.03	knowledge of system operation
1.05.04	knowledge of methods and tools required to operate and maintain the system
1.05.05	ability to interpret specifications
1.05.06	ability to demonstrate system operation as required
1.05.07	ability to document tasks performed

Task 2 **Uses and maintains hand and portable power tools.**

Related Components: Manufacturers' operation and maintenance manuals

Tools and Equipment: Hand tools, measuring tools, and portable power tools

Sub-task

2.01 Uses hand tools.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

2.01.01	knowledge of applicable tools
2.01.02	ability to select appropriate tools
2.01.03	ability to use appropriate tools safely

Sub-task

2.02 Maintains hand tools.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	NV

2.02.01	knowledge of preventive maintenance
2.02.02	knowledge of care and upkeep of hand tools
2.02.03	ability to perform minor repairs

Sub-task

2.03 Uses portable power tools. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MA	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

2.03.01 knowledge of common portable power tools

2.03.02 ability to select power supply sources

2.03.03 ability to select portable power tools

2.03.04 ability to use common portable power tools

Sub-task

2.04 Maintains portable power tools. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	NV

2.04.01 knowledge of preventive maintenance

2.04.02 knowledge of care and upkeep of portable power tools

2.04.03 ability to perform minor repairs safely

Task 3 Uses and maintains equipment.

Related Components: Manufacturers' and maintenance manuals

Tools and Equipment: Hand and power tools, measuring and testing equipment, hoisting, lifting, access, and safety equipment, and specialty equipment

Sub-task

3.01 Uses equipment. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

3.01.01 knowledge of appropriate types of equipment

Supporting Knowledge & Abilities

3.01.02 ability to select equipment to meet task requirements

3.01.03 ability to use required equipment

Sub-task

3.02 Maintains equipment.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	NV

3.02.01 knowledge of preventive maintenance

3.02.02 knowledge of care and upkeep of equipment

3.02.03 ability to perform minor repairs

Task 4 Uses hoisting, lifting, and access equipment.

Related Components: Laws and regulations on workplace and occupational safety and health, workers' compensation regulations, National Building Code (NBC), company standards, load charts and manufacturers' charts, hand signals, and voice communication equipment

Tools and Equipment: Hand tools, testing, hoisting, lifting, access, and safety equipment

Sub-task

4.01 Erects staging, scaffolding, and ladders.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

4.01.01 knowledge of government regulations and manufacturers' standards

4.01.02 knowledge of staging and scaffolding equipment

4.01.03 knowledge of proper procedures for erecting and dismantling staging and scaffolding

Supporting Knowledge & Abilities

4.01.04	knowledge of code and safe practices for working in confined spaces
4.01.05	knowledge of code requirements for fall arrest
4.01.06	knowledge of proper use of ladders
4.01.07	ability to erect and dismantle scaffolding and staging equipment safely
4.01.08	ability to use ladders properly

Sub-task

4.02 Uses and maintains power-elevated work platforms.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

4.02.01	knowledge of government regulations and manufacturers' standards
4.02.02	knowledge of proper equipment maintenance
4.02.03	knowledge of manufacturers' safety standards
4.02.04	knowledge of operational procedures
4.02.05	ability to select equipment
4.02.06	ability to use and operate equipment
4.02.07	ability to maintain equipment

Sub-task

4.03 Uses material handling equipment.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	NV

4.03.01	knowledge of government regulations and manufacturers' standards

Supporting Knowledge & Abilities

4.03.02	knowledge of rigging, hoisting, and access equipment
4.03.03	ability to select equipment
4.03.04	ability to install material handling equipment
4.03.05	ability to calculate the weight of load to be lifted
4.03.06	ability to operate rigging and hoisting equipment
4.03.07	ability to disconnect, remove, and store lifting equipment and material handling devices

BLOCK B

WATER SUPPLY INSTALLATION

Trends: *Increased use of alternate lightweight materials, diesel-driven fire pumps, limited water supply systems and fusion welding of plastic pipes. Increased demand for fire pump installations.*

Task 5 **Installs water supplies.**

Related Components: Regulations and codes, backflow devices, valves and fittings, hydrants, fire department connections, thrust blocks, rodding, pipes anode protection, fittings, flow meters, earthquake restraints, caution tape, sway bracing, alarm devices, level switches, sight cone, drains, controllers, sensing lines, grout

Tools and Equipment: Hand and power tools, specialty equipment, measuring tools, testing, hoisting, lifting, and access and safety equipment

Sub-task

5.01 Determines routing for water supply.

Supporting Knowledge & Abilities

(NOT COMMON CORE)

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
no	yes	yes	yes	no	yes	yes	no	yes	yes	no	no	NV

5.01.01 knowledge of site condition

Supporting Knowledge & Abilities

5.01.02 knowledge of acceptable layouts proposed

5.01.03 ability to verify feasibility of layout

Sub-task

5.02 Determines trenching requirements.

Supporting Knowledge & Abilities

(NOT COMMON CORE)

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	no	yes	yes	no	yes	yes	no	no	NV

5.02.01 knowledge of trench and shape types

5.02.02 ability to assess soil types and conditions

5.02.03 ability to locate other site services

5.02.04 ability to determine trench location

Sub-task

5.03 Supervises trenching and backfilling.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	no	yes	yes	no	no	NV

5.03.01 knowledge of safe trench techniques

5.03.02 knowledge of shoring requirements for trenching

5.03.03 ability to supervise trenching

5.03.04 ability to determine trench dimension

5.03.05 ability to verify grade of trench

Sub-task

5.04 Installs underground piping and components. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	no	yes	yes	no	no	NV

5.04.01	knowledge of types of pipe and fitting
5.04.02	knowledge of connecting techniques such as mechanical, welded, fusion, bell and spigot
5.04.03	knowledge of types of restraints
5.04.04	knowledge of hoisting and rigging
5.04.05	knowledge of wall footing, floor penetration, sleeving, and sealing
5.04.06	ability to schedule installation
5.04.07	ability to select pipes
5.04.08	ability to prepare pipes
5.04.09	ability to install pipes
5.04.10	ability to prepare the trench bed
5.04.11	ability to install restraints
5.04.12	ability to connect system to existing water supply
5.04.13	ability to install pipes through foundation walls and slabs

Sub-task

5.05 Flushes underground system. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	yes	NV

5.05.01	knowledge of flushing requirements
5.05.02	knowledge of flushing techniques
5.05.03	ability to schedule the flush

Supporting Knowledge & Abilities

5.05.04 ability to determine adequate drainage

5.05.05 ability to verify pipe clearance

5.05.06 ability to complete flush report

Sub-task

5.06 Performs required tests.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	no	yes	yes	no	yes	NV

5.06.01 knowledge of disinfecting solutions

5.06.02 ability to schedule tests

5.06.03 ability to disinfect pipes

5.06.04 ability to perform hydrostatic test

5.06.05 ability to complete test report

Task 6 Installs fire and booster pumps.

Related Components: Regulations and codes, driver battery sets, gear drivers, drains, controllers, sensing lines, test headers, grout, flow meters, pressure release valves, casing relief valves, check valves, pressure sensing equipment, exhaust systems, strainers, raw water intake, fuel tanks, fuel containment

Tools and Equipment: Hand and power tools, specialty equipment, measuring tools, testing, hoisting, lifting, access, and safety equipment

Sub-task

6.01 Determines location for pumps.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	NV

6.01.01 knowledge of pump types such as horizontal split case, vertical turbine

Supporting Knowledge & Abilities

6.01.02	knowledge of types of drivers such as electric and diesel
6.01.03	ability to locate supplies
6.01.04	ability to verify pumps and materials
6.01.05	ability to verify space and placement of pump

Sub-task

6.02 Installs pumps and controllers.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

6.02.01	knowledge of pump installation procedures
6.02.02	ability to use lifting and hoisting equipment
6.02.03	ability to prepare base, mounts, and grouting
6.02.04	ability to install piping, valves, and fittings
6.02.05	ability to locate and mount controllers
6.02.06	ability to install related components
6.02.07	ability to install pumps and drivers
6.02.08	ability to adjust packing
6.02.09	ability to commission pump

Sub-task

6.03 Installs piping and components.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

6.03.01	knowledge of types of component
6.03.02	knowledge of pipe installation

Supporting Knowledge & Abilities

6.03.03 ability to install components

6.03.04 ability to install pipes

Sub-task

6.04 Performs required tests. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

6.04.01 knowledge of testing procedures

6.04.02 ability to schedule tests

6.04.03 ability to complete tests

6.04.04 ability to complete report

Task 7 Installs water supply systems.

Related Components: Strainer, trash screen, level indicator, chlorinator, vortex plate, flex connection, fill lines, vent lines

Tools and Equipment: Hand and power tools, specialty equipment, measuring and testing equipment, hoisting, lifting, access, and safety equipment

Sub-task

7.01 Determines location for tanks and reservoirs. **Supporting Knowledge & Abilities**

(NOT COMMON CORE)

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
no	yes	yes	no	no	yes	yes	no	yes	yes	no	no	NV

7.01.01 knowledge of tanks and reservoirs, including their types and sizes

7.01.02 ability to verify location

Sub-task

7.02 Installs water tanks and reservoirs.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	no	yes	yes	no	yes	yes	no	yes	NV

7.02.01 knowledge of base preparation and installation procedures

7.02.02 ability to schedule installation

7.02.03 ability to prepare base mounts and grouting

7.02.04 ability to install liners, waterproofing, and seals

7.02.05 ability to install piping and fitting

Sub-task

7.03 Installs related equipment.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	no	yes	yes	yes	yes	NV

7.03.01 knowledge of installation procedures

7.03.02 ability to select related equipment

7.03.03 ability to follow manufacturers' instruction

7.03.04 ability to locate and install equipment

Sub-task

7.04 Performs required tests.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	no	yes	yes	yes	yes	NV

7.04.01 knowledge of testing requirements

7.04.02 ability to schedule tests

7.04.03 ability to conduct leak, pressure, and performance tests

7.04.04 ability to complete report

BLOCK C

PIPING INSTALLATION

Trends: *Increased special application and special tools to install piping. Increased use of new and lighter materials. Increased fabrication of materials in shops. Increased use of smaller work crews. More need for upgrading skills and knowledge to accommodate new technology. Increased technological advances resulting in lighter but faster-paced tasks.*

Task 8 **Prepares piping and fittings for installation.**

Related Components: Nitrogen cylinders, fire stops, pipe dope, Teflon™ tape, brazing rods, CPVC, solvent, cement, lubricants, cutting oil, crimp fittings, weld fittings, fit fittings, grooved fittings, thread fittings, mechanical fittings and pipe, plastic pipe, tubes and conduits, copper pipe and fittings, steel pipe and fittings, hangers, fastening systems, sleeves, sprinkler heads, escutcheons

Tools and Equipment: Hand and power tools, specialty equipment, measuring tools, testing and safety equipment

Sub-task

8.01 Cuts pipe.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

8.01.01 knowledge of pipe-cutting equipment

8.01.02 knowledge of pipe types and their cutting requirements

8.01.03 ability to operate cutting tools

Sub-task

8.02 Bends pipe.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	no	NV

Supporting Knowledge & Abilities

8.02.01 knowledge of pipe types and their bending characteristics

Supporting Knowledge & Abilities

8.02.02 knowledge of pipe-bending equipment

8.02.03 ability to bend pipe

8.02.04 ability to make templates

Sub-task

8.03 Threads pipe.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

8.03.01 knowledge of thread types, tolerances, and pipe characteristics

8.03.02 knowledge of tools and equipment

8.03.03 knowledge of lubricants

8.03.04 ability to thread pipe

Sub-task

8.04 Grooves pipe.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

8.04.01 knowledge of grooves and pipe types and their characteristics

8.04.02 knowledge of tools and equipment

8.04.03 ability to groove pipe

8.04.04 ability to check groove depth

Sub-task

8.05 Welds pipe and brackets.

Supporting Knowledge & Abilities

(NOT COMMON CORE)

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	no	yes	no	yes	yes	yes	no	yes	yes	no	no	NV

8.05.01 knowledge of pipe types and characteristics

Supporting Knowledge & Abilities

8.05.02 knowledge of welding procedures

8.05.03 knowledge of brazing procedures

8.05.04 ability to perform leak test

8.05.05 ability to fit pipe for welding

Sub-task

8.06 Drills pipe.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

8.06.01 knowledge of pipe types and characteristics

8.06.02 knowledge of required hole size and equipment

8.06.03 ability to operate drilling equipment

8.06.04 ability to drill pipes to specifications

Sub-task

8.07 Installs fittings.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

8.07.01 knowledge of fitting types and characteristics

8.07.02 knowledge of lubricants, adhesives, and joining methods

8.07.03 ability to use proper tools and equipment

8.07.04 ability to install fitting to industry and manufacturers' standards

Sub-task

8.08 Paints pipe.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	yes	no	no	NV

Supporting Knowledge & Abilities

8.08.01 knowledge of pipe identification process

Supporting Knowledge & Abilities

8.08.02	knowledge of the properties of different types of paints
8.08.03	ability to prepare pipe for painting
8.08.04	ability to prepare paint
8.08.05	ability to use painting equipment

Task 9 **Installs piping.**

Related Components: Regulations and codes, field installation

Tools and Equipment: Hand and power tools, specialty equipment, measuring tools, testing, hoisting, lifting, access, and safety equipment

Sub-task

9.01 Installs pipe support.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

9.01.01	knowledge of hanger and bracket types and characteristics
9.01.02	knowledge of proper hanger load requirements
9.01.03	ability to select hangers and supports
9.01.04	ability to fabricate supports
9.01.05	ability to install hangers and supports

Sub-task

9.02 Installs sleeves.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

9.02.01	knowledge of code requirements and specifications

Supporting Knowledge & Abilities

9.02.02	knowledge of coring requirements and equipment
9.02.03	knowledge of pipe types and cutting requirements
9.02.04	ability to select equipment
9.02.05	ability to coordinate location of sleeves
9.02.06	ability to use coring equipment
9.02.07	ability to fabricate sleeves
9.02.08	ability to install pipe sleeves
9.02.09	ability to set sleeve elevations

Sub-task

9.03 Installs pipes.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

9.03.01	knowledge of proper placement procedures
9.03.02	ability to select and use tools and equipment
9.03.03	ability to install pipes

Sub-task

9.04 Prevents leaks from sleeves.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

9.04.01	knowledge of leak-resistant materials
9.04.02	knowledge of appropriate installation procedures
9.04.03	knowledge of fire-resistant spacer standards
9.04.04	ability to prevent leaks from sleeves

Sub-task

9.05 Installs sway/seismic bracing. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

9.05.01	knowledge of local and jurisdictional code requirements and specifications
9.05.02	knowledge of support types and characteristics
9.05.03	ability to select and install supports to manufacturers' specifications and local code requirements
9.05.04	ability to adjust supports as required

BLOCK D

INSTALLATION OF DETECTION, PROTECTION, AND CONTROL SYSTEMS

Trends: *Increased use of environmentally friendly suppression systems. Increased need for knowledge of specialized systems. Increased need for upgrading skills and knowledge to accommodate new technology. Increased use of new products requiring special applications and special tools to install. Increased use of pressure-reducing valves.*

Task 10 Installs fire protection systems.

Related Components: Applicable standard valves and trim, supplementary devices, supervisory devices, and detection devices

Tools and Equipment: Hand and power tools, specialty equipment, measuring tools, testing, hoisting, lifting, access, and safety equipment

Sub-task

10.01 Installs wet systems. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

10.01.01	knowledge of wet system components and applications

Supporting Knowledge & Abilities

10.01.02	ability to determine location of system components
10.01.03	ability to assemble all required system components
10.01.04	ability to disassemble all required system components
10.01.05	ability to perform applicable tests
10.01.06	ability to commission system

Sub-task

10.02 Installs dry systems.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

10.02.01	knowledge of dry system components and applications
10.02.02	ability to determine location of system components
10.02.03	ability to assemble all required system components
10.02.04	ability to disassemble all required system components
10.02.05	ability to perform applicable tests
10.02.06	ability to commission system

Sub-task

10.03 Installs anti-freeze systems.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

10.03.01	knowledge of anti-freeze system components and applications

Supporting Knowledge & Abilities

10.03.02 ability to determine location of system components

10.03.03 ability to assemble all required system components

10.03.04 ability to disassemble all required system components

10.03.05 ability to choose approved non-freezing solutions

10.03.06 ability to perform applicable tests

10.03.07 ability to commission system

Sub-task

10.04 Installs pre-action/deluge systems.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

10.04.01 knowledge of pre-action/deluge systems and applications

10.04.02 ability to determine location of system components

10.04.03 ability to install all required system components

10.04.04 ability to disassemble all required system components

10.04.05 ability to perform applicable tests

10.04.06 ability to commission system

Sub-task

10.05 Installs chemical systems.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

10.05.01 knowledge of wet and dry chemical system components and applications

Supporting Knowledge & Abilities

10.05.02 knowledge of various types of chemicals

10.05.03 ability to determine location of system components

10.05.04 ability to install all required system components

10.05.05 ability to disassemble all required system components

10.05.06 ability to perform applicable tests

10.05.07 ability to commission system

Sub-task

10.06 Installs clean agent systems.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	yes	NV

Supporting Knowledge & Abilities

10.06.01 knowledge of clean agent system components and applications

10.06.02 knowledge of various types of clean agents

10.06.03 ability to determine location of system components

10.06.04 ability to install all required system components

10.06.05 ability to disassemble all required system components

10.06.06 ability to perform applicable tests

10.06.07 ability to commission system

Sub-task

10.07 Services halon systems.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

10.07.01 knowledge of halon system components and applications

10.07.02 knowledge of the environmental effects of halon

Supporting Knowledge & Abilities

10.07.03	ability to determine location of system components
10.07.04	ability to install all required system components
10.07.05	ability to disassemble all required system components
10.07.06	ability to perform applicable tests
10.07.07	ability to commission system

Sub-task

10.08 Installs foam systems.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

10.08.01	knowledge of foam system components
10.08.02	knowledge of various types of foam agents
10.08.03	ability to determine location of system components
10.08.04	ability to install all required system components
10.08.05	ability to disassemble all required system components
10.08.06	ability to perform applicable tests
10.08.07	ability to commission system

Sub-task

10.09 Installs carbon dioxide systems.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

10.09.01	knowledge of carbon dioxide system components

Supporting Knowledge & Abilities

10.09.02	knowledge of the characteristics of carbon dioxide
10.09.03	ability to determine location of system components
10.09.04	ability to install all required system components
10.09.05	ability to disassemble all required system components
10.09.06	ability to perform applicable tests
10.09.07	ability to commission system

Sub-task

10.10 Installs standpipe systems.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

10.10.01	knowledge of standpipe system components
10.10.02	knowledge of various types of standpipe systems
10.10.03	ability to determine location of system components
10.10.04	ability to assemble all required system components
10.10.05	ability to disassemble all required system components
10.10.06	ability to perform applicable tests
10.10.07	ability to commission system

Sub-task

10.11 Installs water mist systems.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

10.11.01	knowledge of water mist system components

Supporting Knowledge & Abilities

10.11.02	knowledge of various types of water mist systems
10.11.03	ability to determine location of system components
10.11.04	ability to install all required system components
10.11.05	ability to disassemble all required system components
10.11.06	ability to perform applicable tests
10.11.07	ability to commission system

Sub-task

10.12 Installs portable extinguishers.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

10.12.01	knowledge of various types of fire extinguishers
10.12.02	ability to determine location of extinguishers
10.12.03	ability to install extinguishers
10.12.04	ability to perform applicable tests

Task 11 Installs detection systems.

Related Components:	Sprinkler heads, piping, fitting/tubing, rate of rise devices, fixed temperature devices, detector wire, infrared detectors, ionization detector, smoke detectors, spark detectors, ultraviolet detectors, sprinkler head shields and sprinkler head guards
Tools and Equipment:	Hand and power tools, specialty equipment, measuring tools, testing, hoisting, lifting, access, and safety equipment

Sub-task

11.01 Installs sprinkler heads.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

11.01.01	knowledge of different types of sprinkler heads
11.01.02	knowledge of applications of sprinkler heads
11.01.03	ability to interpret manufacturers' specifications
11.01.04	ability to determine location
11.01.05	ability to install sprinkler heads
11.01.06	ability to remove sprinkler heads
11.01.07	ability to perform applicable tests
11.01.08	ability to determine proper sprinkler head for heat/temperature requirements

Sub-task

11.02 Installs wet and dry pilot lines.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

11.02.01	knowledge of system components
11.02.02	knowledge of various types of pilot lines
11.02.03	ability to determine location of system components
11.02.04	ability to assemble all required system components
11.02.05	ability to disassemble all required system components
11.02.06	ability to perform applicable tests
11.02.07	ability to commission system

Sub-task

11.03 Installs detector wire systems. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	no	yes	yes	yes	yes	yes	yes	yes	no	yes	NV

11.03.01	knowledge of system components
11.03.02	ability to determine location of system components
11.03.03	ability to assemble all required system components
11.03.04	ability to disassemble all required system components
11.03.05	ability to perform applicable tests
11.03.06	ability to commission system

Sub-task

11.04 Installs heat-actuated detectors (HAD). **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	yes	NV

11.04.01	knowledge of system components and applications
11.04.02	knowledge of various types of heat-actuated detectors
11.04.03	ability to determine location of system components
11.04.04	ability to assemble all required system components
11.04.05	ability to disassemble all required system components
11.04.06	ability to calibrate and test system

Sub-task

11.05 Installs spark detection systems.

Supporting Knowledge & Abilities

(NOT COMMON CORE)

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
no	yes	no	no	yes	yes	yes	yes	yes	yes	no	no	NV

11.05.01	knowledge of system components
11.05.02	knowledge of various types of spark detection systems
11.05.03	ability to determine location of system components
11.05.04	ability to assemble all required system components
11.05.05	ability to disassemble all required system components
11.05.06	ability to perform applicable tests

Task 12 Installs auxiliary devices.

Related Components: Piping and fittings, excess pressure pumps, retard chambers, fire department connections, spare head cabinets, approved non-freezing solutions, air compressor, strainers, supplementary valves and trim, detection checks and water meter, quick-opening devices, hoses rack and cabinets, air dryers and actuation devices, signs, tags and placards, expansion chambers, pull stations, nozzles, monitors, chemical systems, anti-flood devices, solenoid valves, foam-generating equipment, control panels, foam concentration, pumps, foam proportioners, tanks and cylinders, test connections, pressure-reducing devices and pressure-restricting devices, dry and wet extinguisher chemicals, backflow preventers

Tools and Equipment: Hand and power tools, specialty equipment, measuring tools, testing, hoisting, lifting, access, and safety equipment

Sub-task

12.01 Selects auxiliary devices. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

12.01.01 knowledge of various types of system components

12.01.02 ability to select required system components

Sub-task

12.02 Installs auxiliary devices. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

12.02.01 ability to determine location of system components

12.02.02 ability to install required system components

12.02.03 ability to disassemble all required system components

12.02.04 ability to perform applicable tests

Task 13 Installs system supervisory devices.

Related Components: Tamper switches, pressure switches, level indicators, temperature indicators, vane-type flow switches, initiating panels, circuit closers, water motor gong assemblies, fire alarms, strobes, pull stations

Tools and Equipment: Hand and power tools, specialty equipment, measuring tools, testing, hoisting, lifting, and safety equipment

Sub-task

13.01 Installs monitoring devices. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

13.01.01 knowledge of system components

Supporting Knowledge & Abilities

13.01.02 knowledge of various types of monitoring devices

13.01.03 ability to select required system components

13.01.04 ability to determine location of system components

13.01.05 ability to install system's required components

13.01.06 ability to disassemble all required system components

13.01.07 ability to perform applicable tests

Sub-task

13.02 Installs alarm-initiating devices.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

13.02.01 knowledge of system components

13.02.02 knowledge of various types of alarm-initiating devices

13.02.03 ability to select required system components

13.02.04 ability to determine location of system components

13.02.05 ability to install system required components

13.02.06 ability to disassemble all required system components

13.02.07 ability to perform applicable tests

BLOCK E

INSPECTION, MAINTENANCE, AND REPAIRS

Trends: *Increased legislation and regulations requiring specialized training and certification. Increased requirements for inspecting and testing of new and existing systems. Increased demand for maintenance contracts. Increased use of technologically advanced equipment. Increased interconnection with addressable fire alarm systems.*

Task 14 **Maintains fire protection systems.**

Related Components: Maintenance form, resource material, code requirements

Tools and Equipment: Hand and power tools, specialty equipment, measuring tools, testing, hoisting, lifting, access, and safety equipment

Sub-task

14.01 Schedules maintenance.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	NV

14.01.01 knowledge of customer's system requirements

14.01.02 knowledge of facility's operational process

14.01.03 knowledge of preventive maintenance

14.01.04 ability to communicate with clients

14.01.05 ability to plan maintenance process and timing

Sub-task

14.02 Services fire protection systems.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

14.02.01 knowledge of service requirements for various systems

14.02.02 knowledge of facility's operational process

14.02.03 ability to assess service requirements

Supporting Knowledge & Abilities

14.02.04 ability to service fire protection systems and related equipment

14.02.05 ability to complete required documentation

14.02.06 ability to perform required tests

14.02.07 ability to commission system

Sub-task

14.03 Services auxiliary equipment. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

14.03.01 knowledge of applicable auxiliary equipment for fire protection system

14.03.02 knowledge of facility's operational process

14.03.03 ability to assess service requirements

14.03.04 ability to service auxiliary equipment

14.03.05 ability to complete required documentation

14.03.06 ability to perform required tests

14.03.07 ability to commission system

Sub-task

14.04 Tests portable fire extinguishers. **Supporting Knowledge & Abilities**

(NOT COMMON CORE)

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	no	yes	no	no	yes	no	yes	no	yes	yes	yes	NV

14.04.01 knowledge of different types of fire extinguishers

14.04.02 ability to complete required documentation

14.04.03 ability to perform required tests

Sub-task

14.05 Performs fire watch function. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	no	no	yes	yes	yes	yes	yes	yes	yes	NV

14.05.01	knowledge of facility's fire plans and emergency procedures
14.05.02	knowledge of effective communication
14.05.03	knowledge of facility's fire protection systems and auxiliary equipment
14.05.04	knowledge of facility's operational process
14.05.05	ability to recognize different types of fire watch conditions
14.05.06	ability to provide temporary and alternate fire protection during impairments
14.05.07	ability to commission system

Task 15 Repairs fire protection systems.

Related Components: Fire protection systems and fire alarm systems, auxiliary equipment, activation and control systems

Tools and Equipment: Hand and power tools, specialty equipment, measuring tools, testing, hoisting, lifting, access, and safety equipment

Sub-task

15.01 Schedules repairs. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

15.01.01	knowledge of facility's operational process
15.01.02	knowledge of customer's system requirements
15.01.03	knowledge of preventive maintenance
15.01.04	ability to communicate with clients

Supporting Knowledge & Abilities

15.01.05 ability to plan repair process and timing

15.01.06 ability to schedule repairs

Sub-task

15.02 Troubleshoots fire protection systems.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

15.02.01 knowledge of fire protection systems and auxiliary equipment

15.02.02 knowledge of facility's operational process

15.02.03 knowledge of troubleshooting techniques

15.02.04 ability to assess and analyze cause and effect

Sub-task

15.03 Repairs deficiencies.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

15.03.01 knowledge of fire protection systems and auxiliary equipment

15.03.02 knowledge of facility's operational process

15.03.03 knowledge of certification requirements

15.03.04 ability to correct deficiencies

15.03.05 ability to remove and replace components

Sub-task

15.04 Tests repairs.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

15.04.01 knowledge of testing techniques

Supporting Knowledge & Abilities

15.04.02	ability to perform required tests and document data
15.04.03	ability to commission system

Task 16 Inspects fire protection systems.

Related Components:	Fire protection system, auxiliary equipment, and applicable codes
Tools and Equipment:	Hand tools, testing, hoisting, lifting, access, and safety equipment

Sub-task

16.01 Schedules inspection.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

16.01.01	knowledge of facility's operational process
16.01.02	knowledge of customer's system requirements
16.01.03	ability to communicate with clients
16.01.04	ability to plan inspection process and timing
16.01.05	ability to schedule inspection

Sub-task

16.02 Performs visual inspection.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

16.02.01	knowledge of facility's operational process
16.02.02	knowledge of customer's system requirements
16.02.03	ability to communicate with clients

Supporting Knowledge & Abilities

16.02.04 ability to schedule visual inspection

16.02.05 ability to perform visual inspection

Sub-task

16.03 Completes reports.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

16.03.01 knowledge of recordkeeping requirements

16.03.02 ability to communicate with customers

16.03.03 ability to document inspection

Task 17 Tests fire protection systems.

Related Components: Fire protection systems and auxiliary equipment

Tools and Equipment: Hand and power tools, specialty equipment, measuring tools, testing, hoisting, lifting, access, and safety equipment

Sub-task

17.01 Schedules tests.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

17.01.01 knowledge of facility's operational process

17.01.02 knowledge of customer's system requirements

17.01.03 ability to communicate with clients

17.01.04 ability to schedule tests

Sub-task

17.02 Performs required tests.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

17.02.01	knowledge of facility's operational process
17.02.02	knowledge of customer's system requirements
17.02.03	knowledge of various test procedures
17.02.04	knowledge of conditions that require emergency actions and notification of proper authorities
17.02.05	ability to select required testing equipment
17.02.06	ability to perform tests
17.02.07	ability to commission system

Sub-task

17.03 Completes reports.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV

17.03.01	knowledge of recordkeeping requirements
17.03.02	ability to write reports
17.03.03	ability to communicate with customers
17.03.04	ability to document tests performed

APPENDICES

TOOLS AND EQUIPMENT

Sprinkler System Installers may be required to supply their own boots, coveralls, gloves and code book NFPA 13. Items such as hard hats, protection for eyes, ears, and lungs, and all other tools and equipment are usually the responsibility of the employer.

Basic Tools

adjustable wrenches (various sizes)
Allen wrenches (metric and imperial)
broom
brushes (various bristle brushes for caulking gun, chain vice, pipe vice, cleaning and scrubbing)
code book
cold chisels (various sizes)
combination wrenches (metric and imperial)
die and chasers
drywall saw
electric cord
files (flat, half-round, rat-tail, bastard)
flashlight
funnel
gasket cutter
grease gun
hacksaw
hammers (ball-peen, claw, sledge)
hand saw
heaters (electric, natural gas, oil)
hose wrench
line-up bars
mop
nipple chuck
oil can
pail
paint brushes
pick
pigtail
pipe wrench
pliers (needle nose, slip joint)
plumb bob
pry bar
rod dies
scissors
scrapers (various sizes)
screwdrivers (flat, Phillips, Robertson, various sizes)
shovel
snips (heavy duty sheet metal cutting)
socket sets (metric and imperial)
soldering iron
stapler
utility knives
vice-grip
water hose
wire brush
wire cutter
wrench sets (open- and closed-ends, combination)

Power Tools and Equipment

air monitoring device
arc welder
back-flushing machine
chop saw
compressor
concrete cutting machine
core driller
die equipment
drills (portable magnetic base, drill press)
jig saw
knife groover
man lift
mechanical pipe-joining equipment
oxyacetylene brazing torch
oxyacetylene cutting torch
pipe cutter
power spray-painting equipment
powervise

electric drills
electric portable circular saw
electrical induction equipment
electronic measuring device
grinders (wire brush, angle grinders)
hammer drill
hand-held electronic tape
hand-held and stationary radios
headphones
heating torch
hydraulic bender
impact wrenches (electric or pneumatic)
reamer (hand-held or mounted on power threader)
reciprocating saw
roll groover
sandblast equipment
tamper
tapping machine and attachments
testing pump
threading machine
vacuum cleaner (wet/dry)
water pump
wire wheel (body grinder or angle grinder with wire brush)

Specialty Equipment

bench vice
crimping tools
concrete tools
digital camera
flaring tool
foam pump\freeze packs
groovers (cut, roll)
heating torch
press fit, T-drill
test blanks
trowels (concrete and pointer)

Measuring Equipment

builder's level
calculator
callipers
depth gauge
dial indicator
drafting equipment
feeler gauge
laser level
liquid measuring containers
magnetic level
spirit level
square
straightedge
tape measure
thread depth gauge
torque wrench
transit
vernier calliper

Testing Equipment

adapter fittings
amp/volt meter
battery load tester
calibrating gauge
computer
dampening devices
differential pressure gauge
flow meter
heat lamp
hoses
hydrometer
manometer
Pitot tubes
play pipes
pressure gauge kit
refractometer
RPM reader
sight tube
stop watch
tachometer
temperature gauge
test hoses and securement
testing pump, excess, protomatic test pump
two-way radio

Hoisting, Lifting, and Access Equipment

cable clamps
chain block hoist
chains
choker
come-alongs (cable or chain)
fork-lift
jack
hand-turfer
ladder
overhead hoist
power-elevated work platform
pipe buggy (pipe cannon)
pipe stand
portable boom
rope
scaffolding (safety)
shackles
sling
spreader bar
stand
support
tugger

Safety Equipment

air hood
air monitoring device
apron
boots
coveralls
earplugs and earmuffs
face shield
fall arrest system
filtration mask
fire blanket
fire extinguisher
fire hoses
fire-retardant clothing
gloves
goggles
mask (particle, vapour)
reflector vest
respirator
safety glasses
safety helmet (hard hat)
self-contained breathing apparatus (SCBA)
tag- and lock-out devices
travel restraint system
welding partition

GLOSSARY

accelerators and exhausters	quick-opening devices used to allow air to escape from a piping system, thereby speeding the tripping action of a dry pipe valve
air dryer	any one of several types of air dryers, such as refrigerated air dryers and desiccant air dryers
air maintenance devices	equipment used to maintain system air pressure. This includes pressure regulators and compressors.
arc welding	includes: air arc welding, shielded metal arc welding (SMAW) and gas metal arc welding (GMAW)
backflow preventer	any type of equipment that prevents reversal of water flow and protects potable water supply
caution tape	coloured tape buried just above and in line with underground piping to notify future excavators that they are approaching buried pipe
choker	type of cable with loops on both ends that is used for rigging and lifting materials and equipment
CSA	Canadian Standards Association
deluge system	dry pipe system with open sprinkler heads, set up so that when the system is tripped all heads spray simultaneously
dies	equipment used to cut external threads in rod or pipe
double-interlock system	sprinkler system that is set up so that it requires commands from two zones to make it operate
dry pipe system	sprinkler system employing automatic sprinklers attached to a piping system containing air or nitrogen under pressure, which when released (as by a sprinkler opened when heat causes a fuse element to melt) enables the water pressure to open a valve known as a dry pipe valve. The water then flows into the piping system and out the opened sprinklers.
flow switch	device that monitors water flow
foam proportioner	device in a foam fire-extinguishing system that mixes water with foam concentrate
grade	slope of a pipe or trench, usually expressed as a ratio of rise (change in elevation) to run (change in distance)

grooving (of pipe)	step in a process of mechanically joining pipe in which a groove is cut or rolled around the pipe to accommodate a clamp
heat-actuated detectors (HAD)	heat-activated device, triggered when a specified temperature or rate of increasing temperature is detected
hangers	equipment installed on pipes to allow them to be attached to overhead or other support structures
head guards	devices used to protect sprinkler heads from damage
heat tracing	insulated electrical heating wire wound around pipes to prevent them from freezing
mains	term used to describe the large main runs of pipe in a system
locater wire	wire placed above underground non-metallic piping to enable locating those pipes later
manual pull station	manual device used to activate a fire protection system
NFPA	National Fire Protection Association (American organization)
packing	material placed around water or oil-tight shafts to prevent leakage
pigtail	type of packing removal tool
plates	aesthetic or cosmetic plates through which sprinkler heads enter the building space (sometimes called escutcheon plates)
play pipe	flow test pipe attached to the end of a fire hose
pre-action valve	mechanical latch-and-lever dry pipe valve
press-fit	type of pipe joining system that employs special fittings and methods of assembly
reaming	process to restore a pipe to its original inside diameter, usually by removing internal burrs formed when the pipe was cut
retard chamber	piece of equipment that is used to prevent false alarms by accumulating small amounts of water and which allows for drainage of water surges
rodding	threaded rod attached to and running the length of underground piping installations, in order to prevent hydraulic pressure from moving or separating pipe joints
shoring	mechanical or wooden supports placed along the sides of an excavation to support the soil and prevent collapse

sleeve	mechanical block-out installed before or after concrete or other structural placement to enable pipes to pass from one area of a structure to another
sling	metal or synthetic flexible device used to cradle or support a load. Slings are attached to the hoist line of the lifting device to complete the lift.
standpipe system	system to which fire-fighting hoses are attached, usually in high-rise buildings
tamper switch	device that monitors the opening or closing of a valve by sounding alarms. Two examples are post-indicator valves and outside stem yolks.
thrust block	concrete restraint cast in place at any critical point in underground piping installations, in order to prevent hydraulic pressure from moving or separating pipe joints
trimming	smaller or auxiliary piping attached to installed devices such as valves and pumps. Often supplied as a "trim package".
valve	device placed in a pressurized piping system in order to control, direct, or prevent the movement of chemicals, gases, liquids or other substances (examples include: swing, check, wafer check, vertical gate, ball check, ball drip, relief, solenoid, pneumatic, shut-off)
vane-type flow switch	switch activated by vanes that indicate the movement of substance in the piping
water motor gong	water-operated local alarm
wet system / wet pipe system / sprinkler system	sprinkler system triggered by heat from a fire in which water discharges immediately from sprinklers. The automatic sprinklers are attached to a piping system containing water and connected to a water supply.

BLOCKS AND TASKS WEIGHTING

BLOCK A COMMON OCCUPATIONAL SKILLS

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	National Average
%	9	5	10	25	15	18	10	10	10	10	10	10	NV	12%

Task 1 Plans work activities.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	29	50	20	30	25	29	40	10	35	50	15	30	NV	30%

Task 2 Uses and maintains hand and portable power tools.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	28	20	20	20	0	21	30	25	30	20	35	30	NV	23%

Task 3 Uses and maintains equipment.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	21	20	20	25	50	19	10	25	15	10	35	25	NV	23%

Task 4 Uses hoisting, lifting, and access equipment.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	22	10	40	25	25	31	20	40	20	20	15	15	NV	24%

BLOCK B WATER SUPPLY INSTALLATION

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	National Average
%	9	5	20	15	20	12	15	5	10	20	10	10	NV	13%

Task 5 Installs water supplies.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	18	40	25	40	15	34	25	40	10	40	0	20	NV	26%

Task 6 Installs fire and booster pumps.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	58	50	50	30	70	43	50	50	70	40	90	30	NV	52%

Task 7 Installs water supply systems.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	24	10	25	30	15	23	25	10	20	20	10	50	NV	22%

BLOCK C PIPING INSTALLATION

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	National Average
%	44	20	20	15	30	20	30	20	40	50	40	25	NV	29%

Task 8 Prepares piping and fittings for installation.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	36	20	25	20	40	46	50	40	40	50	30	40	NV	36%

Task 9 Installs piping.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	64	80	75	80	60	54	50	60	60	50	70	60	NV	64%

BLOCK D INSTALLATION OF DETECTION, PROTECTION, AND CONTROL SYSTEMS

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	National Average
%	24	55	30	25	25	31	25	50	30	10	15	25	NV	29%

Task 10 Installs fire protection systems.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	39	60	20	60	40	50	40	30	30	80	50	40	NV	45%

Task 11 Installs detection systems.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	19	10	10	20	40	13	20	30	30	10	5	20	NV	19%

Task 12 Installs auxiliary devices.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	24	20	10	10	15	14	20	30	30	5	35	20	NV	19%

Task 13 Installs system supervisory devices.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	18	10	60	10	5	23	20	10	10	5	10	20	NV	17%

BLOCK E INSPECTION, MAINTENANCE, AND REPAIRS

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	National Average
%	14	15	20	20	10	19	20	15	10	10	25	30	NV	17%

Task 14 Maintains fire protection systems.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	22	40	20	20	20	23	25	25	10	10	30	25	NV	22%

Task 15 Repairs fire protection systems.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	21	30	20	25	40	28	25	25	40	10	10	25	NV	25%

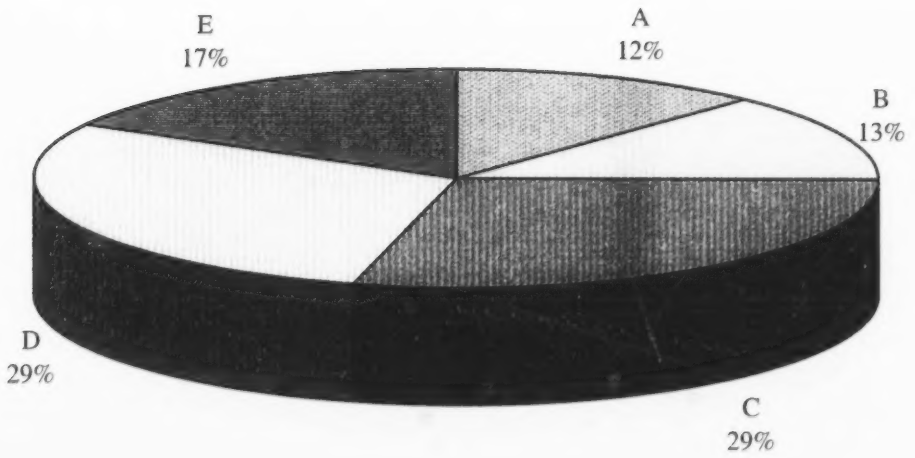
Task 16 Inspects fire protection systems.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	33	10	30	30	25	25	25	25	25	75	50	30	NV	32%

Task 17 Tests fire protection systems.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	24	20	30	25	15	24	25	25	25	5	10	20	NV	21%

PIE CHART*
Sprinkler System Installer



TITLES OF BLOCKS

Block A	Common Occupational Skills	Block D	Installation of Detection, Protection, and Control Systems
Block B	Water Supply Installation	Block E	Inspection, Maintenance, and Repairs
Block C	Piping Installation		

* The average percentage of the total number of questions on an interprovincial examination, assigned to assess each block of the analysis, as derived from the collective input of workers within the occupation from all areas of Canada. Interprovincial examinations typically have from one hundred to one hundred and fifty multiple-choice questions on each examination.

SPRINKLER SYSTEM INSTALLER (2003)

BLOCKS	TASKS	SUB-TASKS
A **Common Occupational Skills**	**1.** Plans work activities.	1.01 Interprets drawings and specifications. / 1.02 Determines materials and labour requirements. / 1.03 Plans work process. / 1.04 Schedules equipment and materials. / 1.05 Completes contractual site requirements.
	2. Uses and maintains hand and portable power tools.	2.01 Uses hand tools. / 2.02 Maintains hand tools. / 2.03 Uses portable power tools. / 2.04 Maintains portable power tools.
	3. Uses and maintains equipment.	3.01 Uses equipment. / 3.02 Maintains equipment.
	4. Uses hoisting, lifting, and access equipment.	4.01 Erects staging, scaffolding, and ladders. / 4.02 Uses and maintains power-elevated work platforms. / 4.03 Uses material handling equipment.
B **Water Supply Installation**	**5.** Installs water supplies.	5.01 Determines routing for water supply. * / 5.02 Determines trenching requirements. * / 5.03 Supervises trenching and backfilling. / 5.04 Installs underground piping and components. / 5.05 Flushes underground system. / 5.06 Performs required tests.
	6. Installs fire and booster pumps.	6.01 Determines location for pumps. / 6.02 Installs pumps and controllers. / 6.03 Installs piping and components. / 6.04 Performs required tests.
	7. Installs water supply systems.	7.01 Determines location for tanks and reservoirs. * / 7.02 Installs water tanks and reservoirs. / 7.03 Installs related equipment. / 7.04 Performs required tests.
C **Piping Installation**	**8.** Prepares piping and fittings for installation.	8.01 Cuts pipe. / 8.02 Bends pipe. / 8.03 Threads pipe. / 8.04 Grooves pipe. / 8.05 Welds pipe and brackets. * / 8.06 Drills pipe. / 8.07 Installs fittings. / 8.08 Paints pipe.
	9. Installs piping.	9.01 Installs pipe support. / 9.02 Installs sleeves. / 9.03 Installs pipes. / 9.04 Prevents leaks from sleeves. / 9.05 Installs sway/seismic bracing.

*** NOT COMMON CORE**

SPRINKLER SYSTEM INSTALLER (2003)

BLOCKS	TASKS	SUB-TASKS
D **Installation of Detection, Protection, and Control Systems**	**10.** Installs fire protection systems.	10.01 Installs wet systems. / 10.02 Installs dry systems. / 10.03 Installs anti-freeze systems. / 10.04 Installs pre-action/deluge systems. / 10.05 Installs chemical systems. / 10.6 Installs clean agent systems. / 10.07 Services halon systems. / 10.08 Installs foam systems. / 10.09 Installs carbon dioxide systems. / 10.10 Installs standpipe systems. / 10.11 Installs water mist systems. / 10.12 Installs portable extinguishers.
	11. Installs detection systems.	11.01 Installs sprinkler heads. / 11.02 Installs wet and dry pilot lines. / 11.03 Installs detector wire systems. / 11.04 Installs heat-actuated detectors (HAD). / 11.05 Installs spark detection systems. *
	12. Installs auxiliary devices.	12.01 Selects auxiliary devices. / 12.02 Installs auxiliary devices.
	13. Installs system supervisory devices.	13.01 Installs monitoring devices. / 13.02 Installs alarm-initiating devices.
E **Inspection, Maintenance, and Repairs**	**14.** Maintains fire protection systems.	14.01 Schedules maintenance. / 14.02 Services fire protection systems. / 14.03 Services auxiliary equipment. / 14.04 Tests portable fire extinguishers. * / 14.05 Performs fire watch function.
	15. Repairs fire protection systems.	15.01 Schedules repairs. / 15.02 Troubleshoots fire protection systems. / 15.03 Repairs deficiencies. / 15.04 Tests repairs.
	16. Inspects fire protection systems.	16.01 Schedules inspection. / 16.02 Performs visual inspection. / 16.03 Completes reports.
	17. Tests fire protection systems.	17.01 Schedules tests. / 17.02 Performs required tests. / 17.03 Completes reports.

* NOT COMMON CORE